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SOILS OF THE EASTERN UNITED STATES AND THEIR USE—XVIII.

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THE WABASH SILT LOAM.

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## SOILS OF THE EASTERN UNITED STATES AND THEIR USE—XVIII.

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### THE WABASH SILT LOAM.

#### GEOGRAPHICAL DISTRIBUTION.

The Wabash silt loam is a widely distributed type of alluvial soil occurring in the bottom lands of all of the larger south-flowing rivers throughout the Central Prairie States and extending southward along their courses to their confluence with the main drainage lines. The type is therefore encountered in a large number of different areas with no considerable acreage in any particular case. It has been mapped in 28 different areas found in 9 States and aggregating 801,756 acres. It is probable that additional surveys in the same general region will show the existence of considerably larger areas, since practically all of the broader bottom lands along the streams throughout the Prairie States contain large or small developments of this important soil type.

#### CHARACTERISTICS OF SOIL AND SUBSOIL.

The depth of the surface soil of the Wabash silt loam varies to a considerable degree in the different areas where it has been encountered. It is rarely less than 8 or 10 inches and may extend to a total depth of 3 feet, or even more. Within these limits there is every variation, even in small areas. The surface soil is a mellow, brown silty loam which becomes almost black in depressed portions of the type, where there has been a tendency toward accumulation of the mucky surface soil. On the other hand it becomes a lighter brown or a yellowish brown upon the low ridges or undulations which possess the best drainage and are not subject to annual overflow. This material grades downward without any perceptible boundary into the subsoil, which becomes lighter in color with increased depth and at 36 inches or more is usually a light-brown, drab, or mottled yellow and gray heavy silty loam. Owing to the alluvial origin of the type, there are minor variations in texture and it frequently occurs that a drab or gray clay may be encountered at the greatest depths, while veins and pockets of sand are encountered here and there in the surface soil or subsoil. There is also a tendency toward the accumulation of some fine sand on the low ridges already mentioned.

The Wabash silt loam is easily distinguishable from the other alluvial bottom land soils of the same region through its characteristic black to dark-brown surface soil, and through the fact that it lies at the lower levels, where it is frequently subject to overflow. It is always associated with the streams which have their headwaters or a considerable part of their course within the region occupied by the brown or black upland prairies of the Central States.

#### SURFACE FEATURES AND DRAINAGE.

The surface of the Wabash silt loam is almost absolutely level, forming the broad first bottoms or overflow lands which occupy one or both sides of the larger streams of the Central Prairie States and of the region immediately to the south. It very often happens that the frequent overflows of the different streams have built up the areas of this soil type which lie immediately adjacent to the stream channel to elevations somewhat higher than the more remote portions of the same bottoms. This arises from the fact that a large part of the suspended sediments are deposited where the force of the current is first checked when the streams overflow their banks. Consequently the larger proportion, particularly of the coarser materials held in suspension, is first deposited and the finer materials in less quantity are carried to the region of quiet water farther from the main stream channel. This continual upbuilding along the course of the stream frequently gives rise to low broad bars or natural levees, which constitute the highest elevations to be found within the areas of the Wabash silt loam. In such locations the material is apt to be somewhat coarser than the general average of the type, and even small areas of fine sandy surface soil of a somewhat lighter color than that which characterizes the type may be found in such positions. These low elevations rarely rise more than 5 or 10 feet above the general altitude of the bottoms and they usually slope sharply down to the stream channel on one side, and gradually and gently out to the general level upon the landward side. The only other departure from an almost absolutely level surface within the area of the Wabash silt loam occurs in the case of the abandoned stream channels or old bayous which are frequently found within all areas of the type. These abandoned channels are usually narrow, crooked, and of shallow depth. They constitute the most serious topographic obstruction to the cultivation of the land which occurs anywhere within the Wabash silt loam area. Their chief utility to agriculture lies in the fact that they usually furnish a fair outlet for the drainage of adjacent fields, thus avoiding the necessity, in some cases, of digging open ditches to carry off surplus water.

The natural drainage of the Wabash silt loam, owing to its bottom-land position and its rather fine texture, is normally very poor. In

addition, practically all areas with the exception of some of the higher front lands are subject to annual overflow during the spring months and may be repeatedly submerged by successive inundations resulting from melting snows and spring rains continuing to about the middle of June. These conditions have retarded the occupation of many considerable areas of the Wabash silt loam for crop-growing purposes. A good crop yield on such areas is certain only when they have been protected by dikes and relieved of excess moisture through the establishment of open ditches supplemented by the use of tile underdrainage. Where such protection and relief have been applied the wonderful fertility of the Wabash silt loam has been made available for agricultural purposes for every season. In other cases the land can be used only in those seasons in which the overflows cease before the time for planting and tillage of the crops. Thus diking and drainage constitute the most important problems in rendering this extremely fertile soil type available for crop production.

The erosion of the Wabash silt loam consists chiefly in the bodily washing away of portions of the type along the convex sides of the great curves and meanders of the streams. It is not infrequently the case that at times of overflow the swift waters of the rising stream cut into the soft silty banks on the outward edges of the curves, removing many acres of fertile soil, which are carried away and redeposited at other points farther down the stream. It is practically impossible to prevent or control this form of erosion in the case of the larger streams, although brush dams and other forms of protection are effective in the case of the smaller rivers and tributary creeks. Occasionally at the height of the overflow some portion of the current may be directed across the surface of this soil type into some old bayou. In such instances deep cuts are rapidly formed in the soft earth, and frequently new minor channels are thus opened across the fields. Sometimes these are occupied for several years by a sluggish current of water at the low-water stages of the river, to be again abandoned and obstructed by the deposition of additional material across the intake of the bayou by some subsequent overflow. Aside from these accidental forms of erosion there is very little damage inflicted upon the Wabash silt loam by flowing water, since it lies so nearly at the base level of the adjacent streams. The slopes, except along the river banks, are very gentle.

Very frequently, however, tributary streams of heavy gradient, which descend from the upland, will be raised to flood level by local showers, and under such conditions will carry down large quantities of local material to be deposited in the form of low alluvial cones at the point where the Wabash silt loam adjoins the upland slopes. The rapid deposition of material under such circumstances prevents the production of crops or thoroughly floods and buries those which may

be growing at the time. In consequence, areas immediately in front of these upland gorges are rarely occupied for the production of hoed crops, remaining either in forest or being used for grazing purposes. This form of damage from erosion taking place over other areas is unusual.

#### LIMITATIONS IN USE.

The chief limitations upon the use of the Wabash silt loam lie in the fact that it is subject to frequent overflow during the spring months and in the additional fact that at all times its lower portions possess but a very poorly established natural drainage. The water table or zone of saturation in the subsoil is frequently found at a depth of only 1 or 2 feet. In consequence the smothering of the crop or its burial through sedimentation at times of overflow constitutes a serious limitation upon the acreage which can be planted to corn, small grains, or potatoes. These limitations do not hold, or at least not to the maximum degree, with the grass crops which may suffer a temporary overflow and make new growth through any shallow deposition of sediment, being often benefited thereby.

The lack of local drainage and the presence of the water table near the surface soil constitute limitations fully as serious upon the crop use of the land. The type rarely, if ever, suffers from drought. In consequence, during those years when overflows are not serious nor prolonged, and in all locations where the altitude of the surface above the normal water level is sufficient, maximum crop yields are obtained. There is a constant tendency in all areas where the Wabash silt loam is cultivated to plant as large an area as possible in corn each year, despite the well-known danger from overflow. The majority of farmers estimate that if they can produce three full crops out of five plantings they will be amply repaid for the labor spent on the land in all of the five years.

In a number of instances cooperative organizations have been formed to build neighborhood dikes for the protection of extensive areas of the Wabash silt loam from overflow. In these instances the farmers on large and small tracts in a favorable location within the bottoms organize a diking district which corresponds in many respects to the ordinary drainage districts of the Central States. Working together they throw up dirt embankments to protect some broad extent of the bottoms, usually bounded to the rear by the escarpment of the uplands and circled in front by some wide bend in the river. The dimensions of the dike must in all cases be governed by the maximum stage which may be anticipated in the river waters and by the local configuration of the bottom land. In some instances dikes have been built so broad that a roadway is established upon the top of the embankment. In others, on smaller projects, the top

of the embankment measures only 2 or 3 feet across. In all cases the front of the embankment should be protected by planting rapidly growing trees, and the dike itself should be seeded and brought into a sod condition as soon as possible after it is erected.

In the process of such construction the earth is most frequently taken from a broad, shallow ditch on the landward side of the embankment. This ditch also serves as a main drainage channel for the land included within the dike. In such cases automatic water-gates are placed in the embankment which prevent the inflow of the river waters at high stages, but permit the outflow of water accumulated behind the embankment after the river recedes. One of the greatest difficulties experienced in this form of embankment and drainage arises in the control of small upland streams which have had their normal courses through the bottom lands which are to be protected. Wherever possible it is desirable to divert the courses of such streams to flow into the main river at a point outside of the embanked area. Lateral dikes are sometimes built along the low portion of the courses of such streams to divert them from their old courses. This prevents filling up the land in the diked bottoms either with water or with sediments carried down from the upland. In practically every case it is advisable, if not absolutely necessary, to provide for a fair number of open ditches which shall lead into the main ditch along the embankment, thus providing for the rapid removal of rain water falling within the area. In some cases it is also necessary to provide for tile underdrainage with outlets into the lateral and main ditches.

In the cases which have been under observation where lands of the Wabash silt loam have been thus protected from overflow and provided with supplementary drainage, the resulting crop yields, almost from the beginning of the enterprises, have paid a handsome return upon the money expended. There is no record that the bonds of such district drainage companies have ever been defaulted. Often the crop yields from areas of this type thus protected are double those secured from any other soils within the same areas covered by soil surveys.

There is a further limitation in the character of crops which may best be grown upon the Wabash silt loam arising from the partially drained condition of the subsoil materials. The type is most successfully used for corn, oats, grass, and those other general farm crops planted and harvested during the same summer season. Winter grain crops or long season crops are liable to suffer from drowning out during the winter months or from the heaving of the land under the action of fall and spring frosts. The particular adaptation of this bottom land soil for the production of corn has led the majority

of farmers who possess arable areas of the type to plant this crop as frequently as possible.

The difficulties from overflow, from poorly established natural drainage, and from its depressed topographic position prevent the successful growing of any orchard fruits. .

#### IMPROVEMENT IN SOIL EFFICIENCY.

Owing to its mode of formation, the Wabash silt loam possesses a considerable depth of mellow silty surface soil heavily charged with decaying or partially decayed organic matter. It is usually stone free and of such level surface as to be easily tilled. In all areas not protected by dikes, the fields are frequently subject to the renewal of surface soil materials through the deposition of the mineral sediments carried by the rivers, which are mingled with the remains of rank swamp vegetation previously growing upon the land. Thus, so far as the inherent properties of the soil material itself are concerned, no difficulty is ever encountered with either the natural fertility or the physical properties of the soil.

In consequence the most important methods for improving the efficiency of this soil type consist in the construction of the necessary embankments for its protection from overflow, and of the necessary drains to remove surplus surface water and lower the permanent water table to a depth of 2 or 3 feet below the surface of the land. These improvements have already been described. It may be said in this connection that probably 60 per cent of the entire area of the type still awaits such improvements in order to render it available for any intensive agricultural occupation. About this proportion of the type still remains in heavily forested bottoms or in semiswampy pasture lands associated with the forests.

#### LIMITATIONS UPON SPECIAL CROPS.

The production of special crops upon the Wabash silt loam is not only limited, but practically prohibited, under all natural conditions by the factors of overflow and drainage already described. Within the protected areas, however, there has been little attempt made to produce other crops than corn, wheat, oats, and grass. By far the greater acreage of the tilled area of the Wabash silt loam is annually devoted to the production of Indian corn. The large yields secured, the ease of cultivation, and the high value of this crop practically exclude all others.

The Wabash silt loam where properly drained and protected is well suited to the production of Irish potatoes, cabbages, onions, celery, and a wide variety of the later market-garden crops suited to the climatic circumstances of the different areas where the type

is found. That these crops are not more generally and more extensively grown is due to the fact that in practically all regions where the Wabash silt loam is found, corn is the dominant crop, and the attention of the farmer is particularly directed toward the planting of the largest possible acreage and toward securing maximum yields of this one crop.

Consequently a soil type so well suited to its production as the Wabash silt loam is devoted almost exclusively to this one crop and other special crops to which it is well adapted have not been seriously considered. Local usage and local demand have been the principal limitations which thus far have excluded the growing of market vegetables upon the Wabash silt loam.

#### EXTENT OF OCCUPATION.

In some areas where it occurs the Wabash silt loam is practically unoccupied for any purpose of intensive cultivation. Its surface is overgrown with a heavy growth of water-loving trees, beneath which flourishes a rank vegetation of brambles, vines, ferns, and grasses. In many cases the trees and other growths are so dense as to form almost impenetrable swamps over a considerable portion of the lower lying area of the type. Wherever low ridges or the natural levees along the river fronts rise to slightly higher altitudes, clearings have been made in this dense forestation, and small areas are cultivated to corn, oats, and grass. Very rarely are any farm buildings found upon the type except within the embanked districts or in similar localities which are naturally protected from overflow. Taking into consideration the entire extent of the Wabash silt loam, it is probable that not over 20 per cent of the type is annually occupied for the production of corn or other tended crops. Probably another 20 per cent is occupied by natural grasses, or by meadows which have been artificially seeded. The remainder consists of native forest through which the native grasses form an irregular carpet of vegetation, succulent, heavy, and valuable in the natural openings, and almost lacking beneath the denser forest growth. This remainder of the type, however, furnishes a large amount of excellent pasturage for beef cattle, dairy animals, and swine.

There still remain many thousands of acres of the Wabash silt loam which may easily and profitably be protected by dikes and relieved of surplus moisture through drains to become some of the most valuable and the most fertile of the minor soil types of the Central States.

#### CROP ADAPTATIONS.

In all discussions of the crop adaptations of the Wabash silt loam it must be borne in mind that the argument applies only to the

smaller percentage of the land which has actually been occupied for the more intensive agricultural uses. No further reference will be made to the greater area of the type which still remains in forest.

Corn is the one universal crop for which the areas of the Wabash silt loam are especially sought out wherever it occurs. It is practically impossible to state any average yields for the corn grown upon this soil. In many localities the crop may be planted successively year after year for 20 to 40 years. Whenever, owing to fortunate circumstances or well-selected location, overflows are avoided, the yields are maintained at an average of 40 to even 60 bushels per acre, even though corn is planted continuously, year after year, in such fashion as would speedily reduce the crop yields upon any of the ordinary upland soils. In other instances, where frequent loss from overflow is encountered, it may be stated that the corn yields range from 40 to 60 bushels or more whenever the crop reaches maturity without encountering an overflow. While in any one year not marked by overflow the yield may attain these high proportions, in the succeeding year not over one-half a crop, and sometimes none at all, will be secured, because of exceptionally high overflow or because the flood waters are maintained to such a late date in the spring that planting to corn is rendered impossible for that season. Consequently the production of corn upon unprotected areas of the Wabash silt loam constitutes an agricultural lottery. While the returns to the successful producer under favorable circumstances are high, the same amount of care exerted in some other season will give practically no return for the seed and labor expended. As has been noted already, the majority of farmers who till this land to corn feel well satisfied with their occupation of the land if they can mature three good crops out of five plantings. The high yields of the three successful years establish a very fair average yield for the entire five-year period.

Upon the higher lying portions of the Wabash silt loam and within certain drainage districts where the overflow is not to be feared winter wheat constitutes an important crop, though its acreage is limited. The yields secured are excellent, ranging from 20 to 25 bushels per acre or even more, with a heavy growth of straw and a fair quality of grain. It is only upon protected areas that wheat may be grown with any certainty, and they must be well provided with drainage, either natural or artificial.

Oats are grown to about the same extent as wheat, with excellent results, yielding from 45 to 50 bushels per acre. Often the yields far exceed the higher figure and aside from a tendency to rust, owing to the moist bottom-land position of the type, maximum yields could probably be attained annually on well-protected land.

Grasses thrive remarkably well upon the moist low-lying Wabash silt loam. Timothy and redbud in particular make large growth and heavy yields. The seeding is maintained for long periods of time without renewal, making excellent mowing land and pasturage when its use for such purposes is desired. Almost pure timothy hay cut on certain areas where the Wabash silt loam has been mapped ran over 2 tons per acre of first-quality hay. In other instances where less care has been taken with the seeding, yields ranging from 1 to 1½ tons are common. Clover, particularly the medium red and mammoth varieties, is not so well suited to growth upon the Wabash silt loam, especially in those areas where the permanent water table lies at a depth of less than 2 feet. The taproot growth of the plant rapidly carries the main root down to the zone of saturation and the clover turns yellow and dies out. Wherever drainage is properly established, either naturally or artificially, the yields of red clover are heavy and frequently a second crop may be cut, from which seed can be saved. This is particularly true in the more northern areas. The white clover seeds naturally in all of the old mowing areas and in the pastures and glades through the forested portion of the type. Alsike clover is also successfully seeded upon land which is too wet for the production of red clover under normal conditions. Thus the Wabash silt loam is admirably adapted to the production of hay for local use or for pasturage purposes.

In certain of the western areas where the Wabash silt loam is not subject to frequent overflow and where the water table exists at a depth greater than 3 feet, alfalfa has come to be recognized as a very successful crop. The same limitation to its production exists as in the case of red clover, through the fact that it also is a tap-rooted plant, sending its main root to considerable depth below the surface. Frequently when the taproot encounters the zone of permanent saturation the stand of alfalfa is impaired, and the field must be plowed or otherwise prepared and reseeded. The yields are heavy, ranging from 3 to 5 tons per acre, depending somewhat in amount upon the length of growing season and the number of cuttings which may be made. A considerable part of the utilized portion of the Wabash silt loam in the western bottom lands is devoted to the growing of alfalfa.

Locally, Irish potatoes are grown in some areas for home use, or in the vicinity of some of the larger cities as a commercial crop. Aside from a tendency toward fungous diseases, due to the moist low-lying position of the soil, the Wabash silt loam is well suited for the production of maximum yields of potatoes. It might well be occupied much more extensively for the production of this crop where the land is protected from overflow and adequately drained.

Cabbages, onions, celery, and other market garden crops are produced in the vicinity of large cities. All of these crops are well suited to production upon the Wabash silt loam, and as in the case of potatoes the area devoted to each might be multiplied several fold and the regions within which the crops are grown might be considerably extended for the better utilization of the Wabash silt loam.

These constitute practically the only crops which are grown to any extent upon the type. It is not probable that with the present demand for corn any large area of the type will be devoted at any one time to the production of other crops except in the event of active local demands for vegetables.

Except for the limited extent of the type in each of the areas where it occurs, and for the considerable cost of properly protecting and draining the soil areas, the Wabash silt loam would rank as one of the best corn soils to be found in the Central States. The limitation in area may not be remedied, but the limitation in occupation might well be overcome through the expenditure of additional sums, either in the nature of a private enterprise or in the form of community drainage and embankment districts, for the reclamation of thousands of acres of this land.

#### FARM EQUIPMENT.

The Wabash silt loam is practically unimproved by farm buildings except in protected districts, because of the liability to overflow, and because of the presence of adjacent swamps and wide strips of swampy forest. The farm buildings in all cases except those mentioned are located upon upland soils, and the farm equipment of the upland farms is principally used for the tillage and cultivation of the Wabash silt loam. There is a wide variation in the character of the equipment used, dependent entirely upon the dominant feature of the upland farming. In general, heavy teams and completely adequate farm tools are employed, with a tendency toward the use of disk plows and disk harrows upon the soft, silty, level surface of this soil.

#### SUMMARY.

The Wabash silt loam is one of the most extensive alluvial bottom-land soils occurring through the central prairie States and a few adjacent States to the south and west. It is of unexcelled fertility when properly protected and drained.

The surface soil is a dark-brown to black mealy silty loam, formed from finely divided mineral matter derived from the upland prairie, mingled with a large amount of decayed or decaying organic matter of local growth. The subsoil, which may be found at a depth ranging from 10 inches to 3 feet, is usually a gray, drab, or mottled heavy

silt loam to clay loam. There is some variation in texture across the surface of the fields, dependent upon the form of deposition of the river sediments. The fine sands accumulate near to the main channels at the point of first deposition in time of overflow, while at lower levels, and in more remote positions, the materials are apt to be somewhat more silty and a little more compact.

The chief limitation upon the use of the Wabash silt loam arises from the annual or frequent overflows which cover a large proportion of its surface during the early spring months. Furthermore, it is poorly drained, owing to the fact that the soil type lies at a low level and the subsoil is usually saturated with water at all times at a depth of 2 feet or more.

The utilization of additional areas of the type for more intensive agriculture is chiefly dependent upon the erection of necessary dikes and embankments to exclude flood waters, and the establishment behind these embankments of adequate drainage through tile underdrains and open ditches. It is frequently necessary to protect the embanked areas from sudden floods descending the courses of local upland streams.

Corn is the principal crop grown upon the Wabash silt loam. With no damage from floods, normal crop yields range from 40 to 60 bushels per acre. The inherent characteristics of the type enable it to maintain such yields through long periods of time. The chief element of uncertainty as to the yield arises from yearly floods.

Wheat and oats are raised to a limited extent, but with excellent results, upon the diked lands of this type.

The Wabash silt loam is one of the best natural grasslands in the Central States, yielding heavy crops of timothy and redtop, and, where drainage has been properly established, excellent harvests of clover. Even areas which are not used for other agricultural purposes furnish excellent natural pasture during the summer season.

Probably 60 per cent or more of the entire area of the Wabash silt loam is still covered by a heavy timber growth occurring through the more swampy or low-lying portions of the type. Approximately 20 per cent is planted to corn, with wheat and oats as secondary crops. Market gardening and potato growing in the vicinity of larger cities occupy a portion of the type, while nearly 20 per cent is maintained in grass for mowing.

In all cases where the engineering features of embankment and drainage have been properly carried out upon well-selected areas, the financial returns received from such treatment have amply justified the expense involved. There remain thousands of acres of the type which may be similarly treated when the demand for this land shall become sufficiently active.

No tree fruits may be grown to advantage upon the Wabash silt loam, owing to the excessive moisture content of the subsoil, and to its depressed topographic position. Orcharding should be confined to adjoining uplands.

The equipment of buildings, teams, and tools for this type of soil is that of adjoining uplands, since there is very little occupation of the type for home-making purposes, except in the banked and drained districts of limited extent.

Approved.

JAMES WILSON,

*Secretary of Agriculture.*

WASHINGTON, D. C., *July 12, 1911.*

## APPENDIX.

The following table shows the extent of the Wabash silt loam in the areas surveyed to the present time.

In the first column is shown the particular soil survey in which the soil was encountered; in the second column, its extent of development in acres; and in the third column, the volume of the Field Operations of the Bureau of Soils in which the report upon the area may be found. Those desiring a detailed description of the soil and of the general conditions which surround it in any particular area may consult these volumes in almost any public library.

### *Areas of Wabash silt loam encountered in the soil survey.*

Survey.	Area of soil.	Year of publica- tions, Field Operations.
	<i>Acres.</i>	
Illinois:		
Clinton County <sup>1</sup> .....	24,576	1902
Dubuque area, Iowa <sup>2</sup> .....	1,344	1902
Knox County <sup>1</sup> .....	29,148	1903
McLean County <sup>1</sup> .....	20,352	1903
Sangamon County <sup>1</sup> .....	40,192	1903
St. Clair County <sup>1</sup> .....	9,664	1902
Indiana:		
Allen County.....	11,136	1908
Greene County <sup>3</sup> .....	16,512	1906
Newton County <sup>1</sup> .....	832	1905
Posey County <sup>1</sup> .....	16,384	1902
Tippecanoe County.....	9,408	1905
Iowa:		
Dubuque area <sup>2</sup> .....	20,928	1902
Tama County <sup>1</sup> .....	70,592	1904
Kansas:		
Brown County <sup>4</sup> .....	29,952	1905
Riley County.....	42,368	1906
Russell area <sup>5</sup> .....	12,864	1903
Kentucky:		
Union County <sup>6</sup> .....	25,216	1902
Minnesota:		
Blue Earth County.....	13,312	1906
Missouri:		
Atchison County.....	36,800	1909
Cooper County.....	57,600	1909
Crawford County.....	42,112	1905
Howell County.....	48,512	1902
Putnam County.....	27,264	1906
Saline County <sup>7</sup> .....	5,440	1904
Scotland County.....	46,016	1905
Nebraska:		
Lancaster County.....	87,616	1906
Sarpy County.....	18,496	1905
Stanton area <sup>8</sup> .....	25,152	1903
Oklahoma:		
Oklahoma County.....	11,968	1906

<sup>1</sup> Mapped as Kaskaskia loam.

<sup>2</sup> Mapped as Lintonia loam.

<sup>3</sup> Mapped as Huntington silt loam.

<sup>4</sup> Mapped as Yazoo silt loam.

<sup>5</sup> Mapped as Waldo loam.

<sup>6</sup> Mapped as Waverly silt loam.

<sup>7</sup> Mapped as Clarksville loam.

<sup>8</sup> Mapped as Elkhorn silt loam.





